



The 2008 Regional Workforce Forecast

A work product of Partnership for Prosperity

A study commissioned and underwritten by members of the
Partnership for Prosperity Education Action Team

Conducted by the Sacramento Regional Research Institute and Valley Vision



Partnership for Prosperity: an alliance of 34 public, private, and nonprofit economic development organizations delivering on economic development strategies benefiting the Capital Region.

FORECAST BACKGROUND

“Regions that successfully and effectively align education and training to meet regional workforce needs will be successful.”

Joel Kotkin, best-selling author, futurist, and Presidential Fellow in Urban Futures at Chapman University in Orange, California.

In our 21st Century economy, people are the most valuable competitive asset we have. While low infrastructure costs, reliable utility rates, affordable housing, and efficient transportation networks will always be staples of economic development, these days it is access to a highly qualified workforce that dominates all other requirements for employers of all kinds. And that need will likely accelerate and grow.

Our region's leadership recognizes that our prosperity hinges on joint planning and action. That's why Partnership for Prosperity (PFP) was formed – 34 allied economic development organizations in our six-county Capital Region championed by the Sacramento Metro Chamber, the Sacramento Area Commerce and Trade Organization (SACTO), Valley Vision and scores of public, private, and nonprofit

volunteer leaders. They set out to analyze our region's competitive advantages and then committed to work jointly on a set of common initiatives that would improve everyone's prosperity.

Top Findings:

337,427 total job openings by 2015

162,874 new jobs

174,553 from replacements

188,000 jobs require on the job training

89,000 jobs require higher education (AA to PhD)

Figures are estimates based on Forecast findings.

“People” quickly became one of the main focus areas of PFP (developing “place” and “business” were the other two) and drew the leadership and expertise from

area schools, colleges and universities, job training providers, private and public employers, government and nonprofit associations. Two interlocking strategies emerged from the newly formed PFP Education Action Team. First was to develop a forecast of the occupations and skills that would be in high demand over the next 10 years. Second was to create a central clearinghouse of education and training providers in our region. The goal was not only to gain easy visibility to this vital information, but ultimately to compare future job and skill demands against available education and job training offerings as a means to align effort and resources more efficiently and strategically.

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Our region's leadership recognizes
that our prosperity hinges on joint
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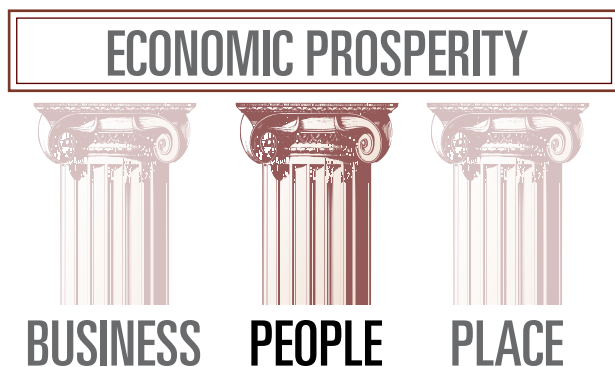
This *Regional Workforce Forecast* is the result – an exhaustive 10-month study with primary and secondary research conducted by Sacramento Regional Research Institute (SRRI) and Valley Vision, overseen by employers, local workforce experts, and education and training providers. This Forecast studied 75 industries representing over 80 percent of our regional job base. These 75 industries were further broken down into over 700 jobs which, in turn, have been broken down into education and training levels, skills and competencies, and associated salary levels.

Because the Forecast gathered an amazing amount of data, the Team elected to place all the information in a searchable online data base available to you at www.careergps.com. We think this is the most effective way to share, sort, and make sense of this information for analysis and action by decision-makers in our region.

Nothing like the *Regional Workforce Forecast* has been done before. It creates a new benchmark for additional study and comparison. We think it can serve as a powerful resource to educators, training providers and economic developers to align education and training to meet our workforce needs. It's an important first step in understanding how we ought to prepare for a highly competitive workforce aligned to our economy's needs today and 10 years from now. Our next step is action.

Introduction

Regional economic prosperity is supported by three pillars—Business, People, and Place—that incorporate characteristics of the local business climate, workforce, and quality of life. The Partnership for Prosperity effort recognized that strength in all three pillars is critical for regional prosperity and competitiveness. Accordingly, the resulting business plan for the Sacramento Region developed by the Partnership includes strategies directed at enhancing regional performance in each of the three areas. By creating broad community support and incorporating the strategies within the work plans of the partnering organizations, the Capital Region seeks to improve its future prosperity and competitiveness.



Understanding that one of the greatest assets to any region is its people, Partnership for Prosperity focuses on strengthening the “People pillar” through an overarching strategy to develop a first-class workforce aligned with the needs of the local economy. A high-quality and capable workforce is undoubtedly an important economic development asset. Businesses search for those regions that can best meet their critical workforce needs, currently and into the future. Additionally, existing employers look to the workforce to support their continued success. A well-trained, educated, and qualified workforce, combined with a workforce development and education infrastructure that effectively provides education and training programs aligned with workforce needs and economic objectives,

gives a community a distinct competitive advantage. Unlike other incentive- or cost-based advantages that can be duplicated to some extent by competing regions, a strong workforce is an attribute that is hard to match.

Many regions throughout the nation have experienced economic restructuring and, as a result, have seen demand for a new mix of jobs, greater mobility across occupations, and increasing requirements for a higher level and broader set of core skills. A region can build its workforce assets by ensuring that the labor pool matches the needs of local and regional employers. This necessitates strong ties between the economic development, business, workforce development, and education communities. Moreover, it requires that each group is making informed decisions that help align the demand for employees with the supply of workers and skills in the labor market. On the demand side, it is important to have an understanding of the specific types of jobs, necessary skills, and required education and training that serve the current economic environment as well as emerging industries and likely future needs. In terms of supply, essential considerations include not only the structure of the existing workforce, but also the types of training and education programs available, program content and outcomes, ability to import workers, and the pipeline of future employees.

The Partnership for Prosperity Education/Workforce Action Team commissioned the *Regional Workforce Forecast* in order to generate estimates of workforce demand in the Sacramento Region over the next 10 years. The primary objective of the study is to give our economic development, workforce development, and education communities a new tool to help them understand and assess the specific workforce needs generated by those industries that will be important to the Sacramento Region’s economy over the next 10 years. The study specifically addresses the demand side of

INTRODUCTION

the equation and was not intended to provide information on the supply side, prioritize outcomes, or evaluate infrastructure or capabilities to address the demand. While the *Regional Workforce Forecast* was being developed, the Action Team undertook an effort to create a Web-based clearinghouse of training and education programs in the region tied to job-specific information. This clearinghouse helps build some of the supply side of the equation, which can be evaluated alongside the workforce demand information to supplement the Action Team's efforts. As more information is gathered on workforce supply dynamics and priorities are identified, the forecast study data can ultimately be used in a further assessment of the ability of the Region to meet the anticipated labor needs. In the end, the Action Team's efforts could create the foundation for linking supply and demand to build an even greater workforce advantage in the Sacramento Region.

The Sacramento Regional Research Institute (SRRI), a joint venture of the Sacramento Area Commerce and Trade Organization (SACTO) and California State University, Sacramento (Sacramento State) teamed up with Valley Vision, an organization that

Fundamentally, the study was designed to identify a select group of industry sectors that will be important to the six-county Sacramento Region's economy in the future, define which occupations support those industry sectors, and evaluate the necessary training levels and competencies for those occupations.

brokers and supports regional initiatives, to conduct the *Regional Workforce Forecast*. Fundamentally, the study was designed to identify a select group of industry sectors that will be important to the six-county Sacramento Region's economy in the future, define which occupations support those industry sectors, and evaluate the necessary training levels and competencies for those occupations. The study approach and resulting information are unique within the region and, as such, will serve as a benchmark and act as a new tool to inform decisions.



INTRODUCTION

Four foundational principles guided the *Regional Workforce Forecast*:

1. Industry sectors and the businesses within them are the primary drivers of occupational demand.
2. Occupational demands within industry sectors are based on staffing patterns and consist of new and replacement jobs.
3. There are typical education and training requirements for occupations that allow for employee proficiency and reflect the preferences of employers.
4. Specific sets of knowledge and skills allow workers to effectively perform their job functions and are transferrable within and across industry sectors.



The study approach necessarily followed these principles with the bulk of the analysis focusing on industry sectors, occupations, training levels, and competencies. Supplemental information was also studied including occupational wages and general training providers to allow the Action Team to explore and query the results in a number of different meaningful ways and prioritize outcomes.

This report provides a summary of the high-level findings from the *Regional Workforce Forecast*. It is broken down into six main sections. The first section introduces the industry sectors that are important to the Region's economy. In the second section, the general occupational demand that the industry sectors create is explored along with the most-demanded occupations. Section three discusses the education and training levels required by the occupations and the general types of providers that support these levels. Wage levels of the demanded occupations are analyzed in the fourth section. The fifth section describes the sets of knowledge and skills that are transferrable within and across industry sectors. The sixth and final section provides a summary of the primary report findings and important considerations moving forward. In addition to the six main sections, Appendix A presents the research methodology employed in the study.

It is also important to note that the study produced an exceptional amount of valuable data that are not included in this report. The Education/Workforce Action Team has incorporated all of the data generated in the study along with the information gathered in the clearinghouse effort into an interactive Web site that will allow economic developers, education and training providers, students, job seekers, employers, and others to search the data and create customized reports. Visit www.careergps.com to learn more.

KEY INDUSTRIES

A diverse group of established and emerging industries will be important to the Sacramento Region's economy over the next decade. The key industries, the foundational focus of the Regional Workforce Forecast, consist of a group of 75 industries that accounts for over 80 percent of the Region's employment in 2005 (the most current year of detailed data available at the commencement of the study). These industries were selected based on historical performance, current conditions, existence of focused regional efforts, and feedback from the economic development community. It is important to note that there is another large portion of the economy (20 percent) that, although not accounted for in this study, also has notable labor needs. Over the next 10 years, the group of 75 key industries is expected to see a 22 percent increase in the total number of jobs, a growth rate slightly higher than the anticipated regional average. All in all, the key industries could generate nearly 163,000 new jobs in the Region's economy through 2015 (equivalent to over 17 percent of the current employment base), creating significant opportunities for local residents and considerable demands on education and training providers to ensure that the workforce aligns with the needs of employers within these industries.

Businesses and organizations within the key industries engage in a wide array of local-serving and export activities and are part of a number of critical clusters such as autonomous technology, building products, clean energy technology (a specific focus of another Partnership for Prosperity strategy), finance, government, healthcare, life sciences, and tourism. Many of these industries capture emerging activities that are ultimately defined by the creative and innovative economy; therefore, all aspects of these industries are not yet fully understood and could not be captured in this study. Employment within specific sectors ranges from a few hundred to tens of thousands with the average supporting close to 10,000 jobs. Some of the sectors in the group with the largest base employment include food services, state government, public education, local government,

and hospitals, all with job counts over 20,000. Overall, the 75 key industries will be the primary drivers of workforce demand in the Region in the coming decade.

Sacramento Region Key Industries

Agriculture, Forestry, Fishing & Hunting

- Fruit & Tree Nut Farming

Utilities

- Electric Power Generation, Transmission & Distribution

Construction

- Residential Building Construction
- Nonresidential Building Construction
- Highway, Street, & Bridge Construction
- Foundation, Structure, & Building Exterior Contractors
- Building Equipment Contractors
- Building Finishing Contractors
- Other Specialty Trade Contractors

Manufacturing

- Other Wood Product Manufacturing
- Cement & Concrete Product Manufacturing
- Computer & Peripheral Equipment Manufacturing
- Semiconductor & Other Electronic Component Manufacturing

Wholesale Trade

- Lumber & Other Construction Materials Merchant Wholesalers
- Grocery & Related Product Wholesalers

Retail Trade

- Automobile Dealers
- Electronics & Appliance Stores
- Building Material & Supplies Dealers
- Grocery Stores
- Health & Personal Care Stores
- Clothing Stores
- Department Stores
- Other General Merchandise Stores

KEY INDUSTRIES

Transportation & Warehousing

- General Freight Trucking
- Couriers
- Warehousing and Storage

Information

- Newspaper, Periodical, Book, & Directory Publishers
- Software Publishers
- Wired Telecommunications Carriers
- Wireless Telecommunications Carriers (except Satellite)
- Telecommunications Resellers

Finance & Insurance

- Depository Credit Intermediation
- Nondepository Credit Intermediation
- Activities Related to Credit Intermediation
- Insurance Carriers
- Agencies, Brokerages, & Other Insurance Related Activities

Real Estate & Rental & Leasing

- Offices of Real Estate Agents & Brokers
- Activities Related to Real Estate

Professional, Scientific, & Technical Services

- Legal Services
- Accounting, Tax Preparation, Bookkeeping, & Payroll Services
- Architectural, Engineering, & Related Services
- Computer Systems Design & Related Services
- Management, Scientific, & Technical Consulting Services
- Scientific Research & Development Services
- Advertising & Related Services
- Other Professional, Scientific, & Technical Services

Management of Companies & Enterprises

- Management of Companies & Enterprises

Administrative & Support & Waste Management & Remediation Services

- Employment Services
- Business Support Services
- Investigation & Security Services
- Services to Buildings & Dwellings
- Remediation & Other Waste Management Services

Educational Services

- Educational Support Services

Health Care & Social Assistance

- Offices of Physicians
- Offices of Dentists
- Offices of Other Health Practitioners
- Outpatient Care Centers
- Other Ambulatory Health Care Services
- General Medical & Surgical Hospitals
- Nursing Care Facilities
- Community Care Facilities for the Elderly

Arts, Entertainment, & Recreation

- Other Amusement & Recreation Industries

Accommodation & Food Services

- Traveler Accommodation
- Full-Service Restaurants
- Limited-Service Eating Places

Other Services

- Automotive Repair & Maintenance
- Business, Professional, Labor, Political, & Similar Organizations

Federal Government

- Department of Defense
- Other Federal Government

State Government

- State Government Education
- Other State Government

Local Government

- City Government
- County Government
- Local Government Education
- Other Local Government

TOP OCCUPATIONS

The Sacramento Region's key industries will demand workers to fill new jobs created by general sector growth as well as openings from separations due to events such as career changes, promotions, and retirements. A total of over 337,000 openings could be created in the Region within the key industries over the next 10 years. This is an extensive amount of workforce demand considering that many of the Region's employers feel that there are currently not enough qualified personnel to go around and some must import workers (recruited from outside the Region both nationally and internationally) to fill critical positions. In addition to the 163,000 new jobs generated from anticipated economic growth in the key industries, nearly 175,000 additional openings could be available as a result of replacement needs through 2015. Demographic shifts in the workforce are a primary driver of these replacement needs where a significant amount of retirement activity is anticipated in the next decade, extending the need for workers to move into occupations and up the career ladder to fill the holes left by retirees.

In addition to the 163,000 new jobs generated from anticipated economic growth in the key industries, nearly 175,000 additional openings could be available as a result of replacement needs through 2015.

while four require a higher education degree and one relies on work experience. In terms of wages, most of the occupations are low-paid (nine) with seven garnering moderate wages and one earning high compensation. Five of the 17 occupations demonstrate projected 10-year demand of over 10,000 openings including food preparation & serving workers; waiters & waitresses; retail salespersons; office clerks; and cashiers—combined, these five encompass close to 17 percent of the future demand.

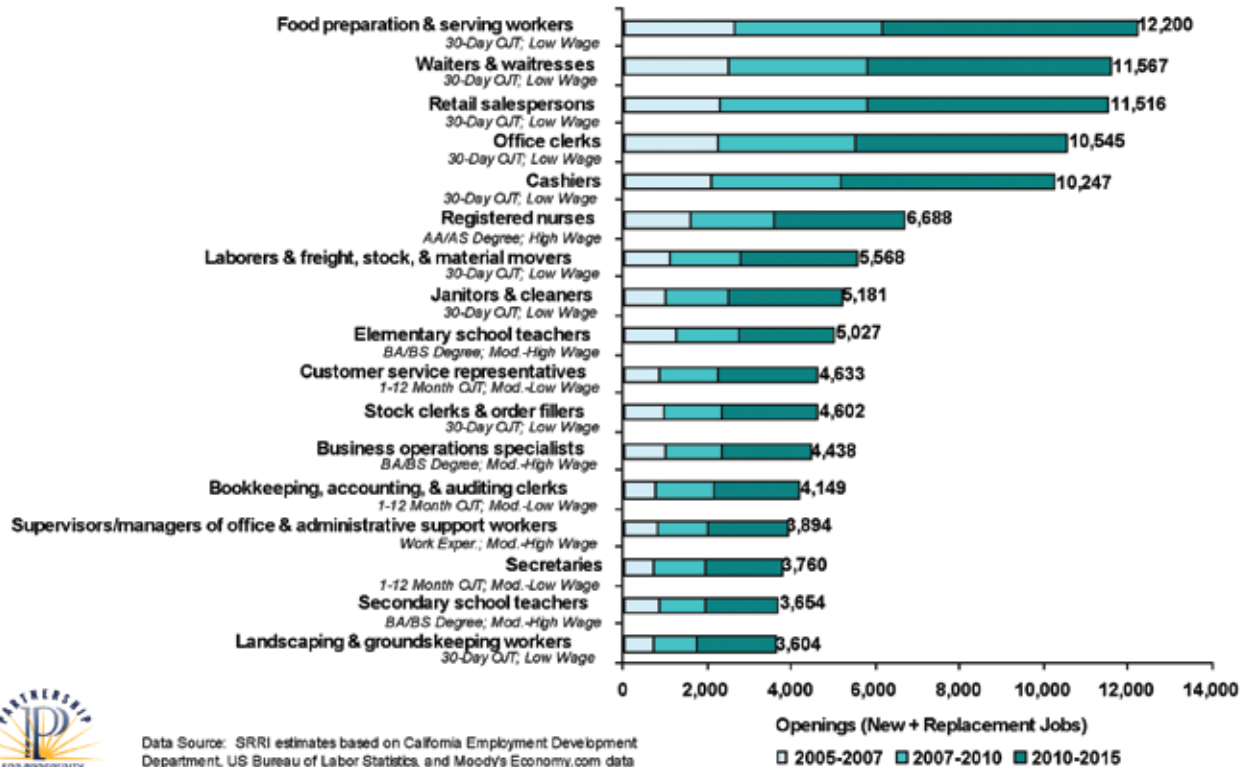


A handful of occupations will be heavily demanded by the key industries through 2015. As shown in Figure 1, one-third of the Region's anticipated openings over the next ten years (over 111,000 openings) fall within a group of 17 occupations, all

of which are supported by a wide range of the key industries. Most of these occupations (12) are low-skilled, requiring some level of on-the-job training

TOP OCCUPATIONS

Figure 1 - Sacramento Region Key Industries' Total Job Demand for Top Occupations through 2015



The top occupations are the backbone of the Region's economy, supporting the needs and success of the key industries. In fact, most people in the Region likely encounter or are directly affected by workers in these occupations on a daily basis. Moreover, although the level and order vary to some extent, most of the occupations have been shown to play a critical role in the statewide and national economies as well. The California Employment Development Department's (EDD) most recent occupational projections for the state show an overlap of 12 occupations in its top-third of future demand, including all of the first 10 in Figure 1. The areas where the occupational projections differ are generally higher-skilled for the Sacramento Region. At the national level, the top one-third of the U.S. Bureau of Labor Statistics' (BLS) projected 10-year occupational demand also has 12 occupations in common with the Sacramento Region with the first 11 in Figure 1 represented in both lists. The skill-level differences in these lists are fairly equal

with jobs requiring training across the spectrum included in one, but not in the other. While the Sacramento Region's key industries show some unique needs, overall the occupational demands reflect a core set of jobs that are critical to the success of any economy. Furthermore, experience in many of these top jobs provides a foundation that can open up pathways to other occupations. It is important to note that these central jobs encompass just a portion of the workforce demand of the key industries—the Action Team will be making data for the full set of over 750 occupations supported by the key industries available through an interactive web site.

Figure 2 demonstrates that a little more than half of the openings in the top occupations over the next 10 years (close to 62,000) will be generated by replacement needs. Almost half of these replacement openings are a result of the need to address separations in four of the 17 occupations

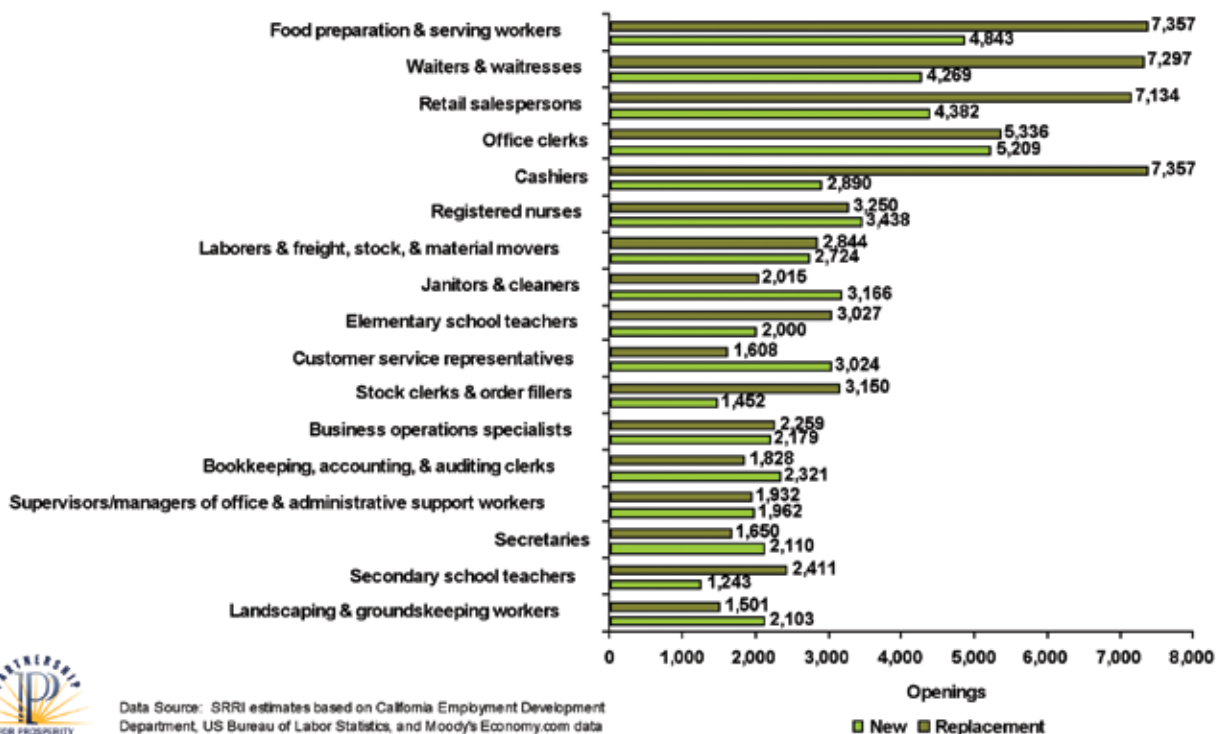
TOP OCCUPATIONS

including food preparation & serving workers; waiters & waitresses; retail salesperson; and cashiers (all of which could see over 7,000 replacement openings through 2015). These particular occupations are typically viewed as temporary, non-career jobs, creating dynamic movement in and out of positions, which drives the heavy replacement needs. Most of the remaining top occupations more closely follow the pattern of all demand in the key industries with only somewhat more replacement openings than new jobs. On the whole, growth in the key industries could create over 49,000 new jobs among the top occupations (about 44 percent of total openings in this group of jobs). In some occupations, new openings could outpace replacement needs—registered nurses; janitors & cleaners; customer service representatives; bookkeeping, accounting, & auditing clerks; secretaries; and landscaping & groundskeeping workers all show notably more openings resulting from new jobs compared to replacements.

Education and training providers must continue to be cognizant of the key industries' needs for these core occupations as well as the fact that churning in some jobs along with continued growth could create significant demand.

While only one management position is reflected in the top-third of occupational demand, it is important to note that employers in the Sacramento Region's key industries cite a critical need for managers across all disciplines. This shortage is becoming even more evident as retirees are increasingly moving out of positions at all management levels. At the same time, the pipeline of workers to fill these positions has not fully developed or does not currently exist in many industries. Because the Region is expected to see a significant level of replacement needs, the demand for management level occupations should also be scrutinized in focused workforce development efforts.

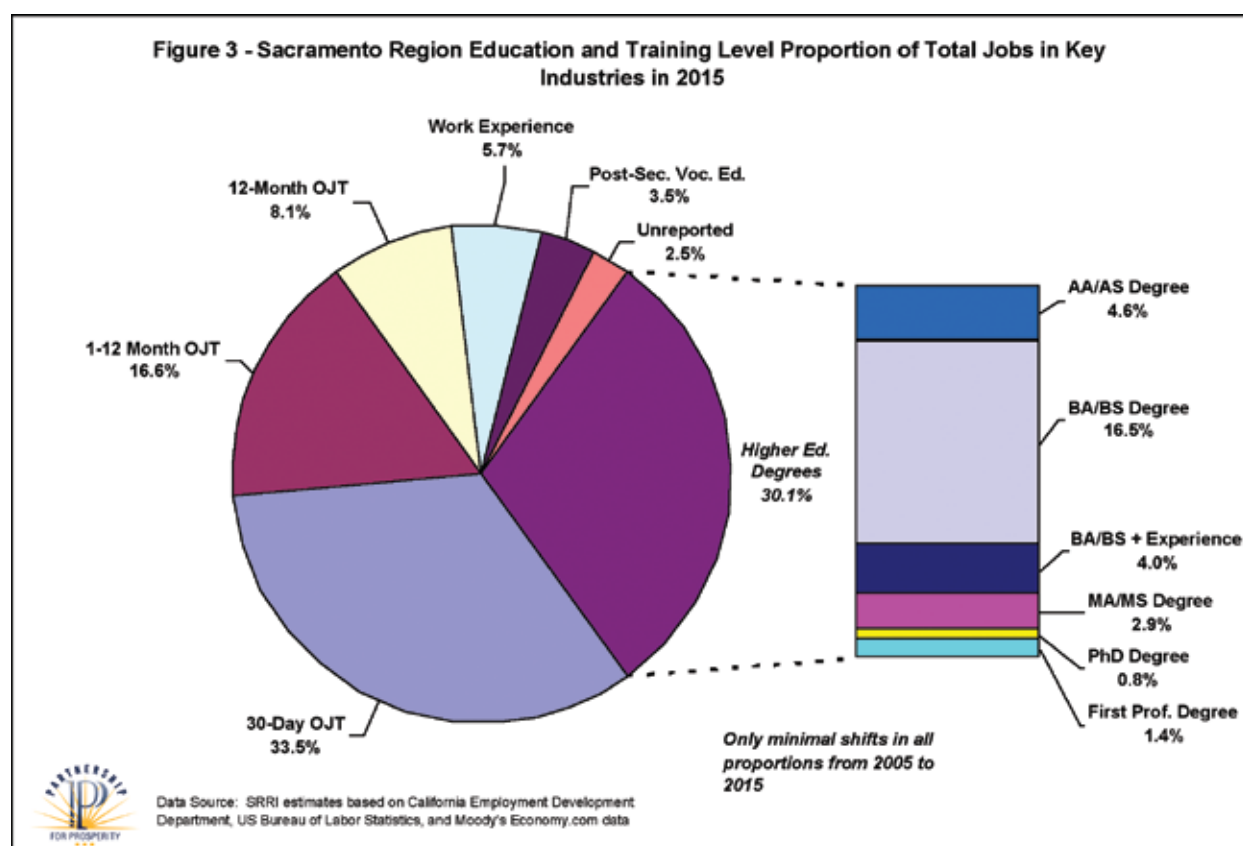
Figure 2 - Sacramento Region Key Industries' New and Replacement Job Demand for Top Occupations through 2015



EDUCATION AND TRAINING LEVELS

A considerable portion of all the jobs in the key industries has been and will likely continue to be in occupations that require short- and moderate-term on-the-job training. Figure 3 illustrates that about half of the total 897,000 jobs in the 75 key industries projected in 2015 could fall within these two training levels. Another significant amount, 30 percent, of the total jobs are expected to require a higher education degree with the bachelor's degree education level making up a notable chunk of these jobs (and accounting for close to 17 percent of all jobs). The remaining 21 percent of jobs are expected to be captured in the middle range of training levels or are unreported with long-term on-the-job training making up the largest proportion of this group (8 percent of all jobs). This break-down is nearly identical to the education and training level composition of the current workforce supported by the key industries.

Jobs in all education and training levels are critical to the success of the key industries in the Sacramento Region. The anticipated occupational composition in the key industries is skewed more heavily toward the higher end of the range of education and training levels compared to the Region's economy overall and projections for the statewide and national economies. Comparing the *Regional Workforce Forecast* to SRRI's previous research reveals that the key industries support a greater proportion of jobs requiring a long-term on-the-job training level and above than what is supported by the Region's economy in its entirety. At the higher education and training levels, the Region's full economy even has a larger concentration of jobs than many of its competitors and this distinction will likely continue if the key industries continue to drive the economy. Looking forward into the next decade, EDD and BLS occupational projections for the state and nation show a greater proportion of total jobs in the short- and moderate-term on-



the-job training levels and a smaller percentage requiring a higher education degree in relation to the forecasted demand in the Region's key industries. Clearly, the 75 key industries support a unique education and training level structure in the Sacramento Region that will continue to make greater use of higher-level jobs than what might be expected in the broader economy.

The spikes in Figure 4 illustrate where the most significant demand for new and replacement jobs will fall in the education and training level spectrum. Over the next 10 years, the key industries could generate close to 136,000 openings for jobs requiring short-term on-the-job training (over 40 percent of all openings). This will require a response from the primary and secondary education community, adult education providers, and employers to effectively address these needs. Jobs with the greatest expected openings in this training level showed up as the most heavily-demanded jobs across the key industries listed in Figure 1. The high levels of demand in this training level lead to 26 distinct jobs with over 1,000 projected openings through 2015. The same types of education and training providers, along with regional occupation and training programs, could also be looked upon to help meet the demands in the second-largest category, moderate-term on-the-job training. This training level could contain over 15 percent of all openings created by the key industries in the next decade (almost 52,000 openings). Many of the jobs with the largest projected openings requiring this training level were also listed among the top occupations across the key industries (shown in Figure 1). Sixteen occupations requiring moderate-term on-the-job training are expected to see more than 1,000 openings generated by the key industries over the next decade. The third-largest grouping of openings could be in occupations requiring a bachelor's degree with a total of more than 42,000

Top Occupations in Key Industries' Highest-Demanded Education and Training Levels

Short-Term On-the-Job-Training

- Food preparation & serving workers
12,200 openings; low wage
- Waiters & waitresses
11,567 openings; low wage
- Retail salespersons
11,516 openings; low wage
- Office clerks
10,545 openings; low wage
- Cashiers
10,247 openings; low wage

Moderate-Term On-the-Job Training

- Customer service representatives
4,633 openings; moderate-low wage
- Bookkeeping, accounting, & auditing clerks
4,149 openings; moderate-low wage
- Secretaries
3,760 openings; moderate-low wage
- Executive secretaries & administrative assistants
3,567 openings; moderate-low wage
- Construction laborers
2,824 openings; moderate-low wage

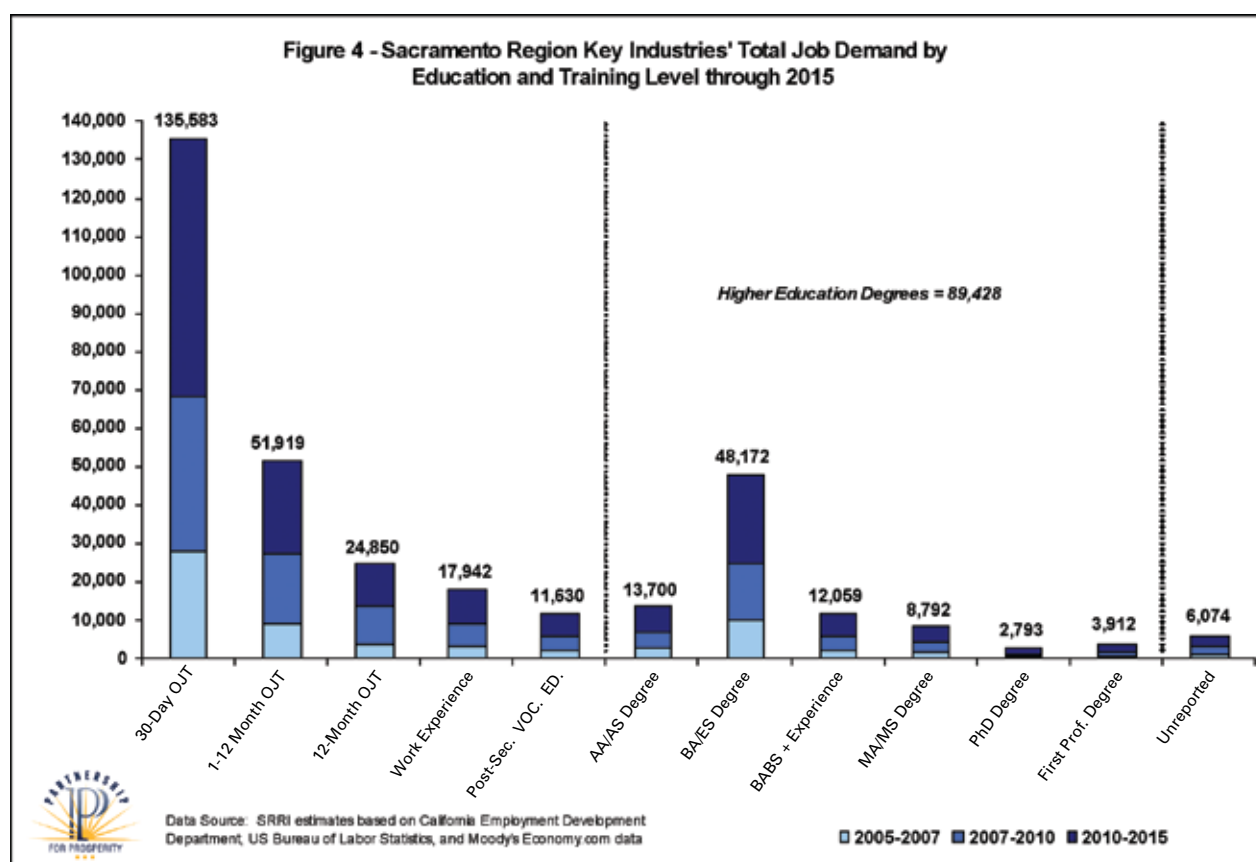
Bachelor's Degree

- Elementary school teachers
5,027 openings; moderate-high wage
- Business operations specialists
4,438 openings; moderate-high wage
- Secondary school teachers
3,654 openings; moderate-high wage
- Accountants & auditors
2,828 openings; high wage
- Middle school teachers
1,509 openings; moderate-high wage

EDUCATION AND TRAINING LEVELS

new and replacement jobs through 2015 (a little more than 14 percent of the total demand). The Region will depend upon the public and private higher education institutions (including related continuing education programs) to address this demand. There are 13 jobs requiring this level of education with 10-year projected openings of over 1,000 with most garnering moderate-high or high wages—three of these were listed among the most-demanded occupations shown in Figure 1. Extended further, the key industries could produce a significant amount of openings for occupations requiring a higher education degree, a combined total of over 89,000 openings (close to 27 percent of the entire 10-year job demand). Addressing

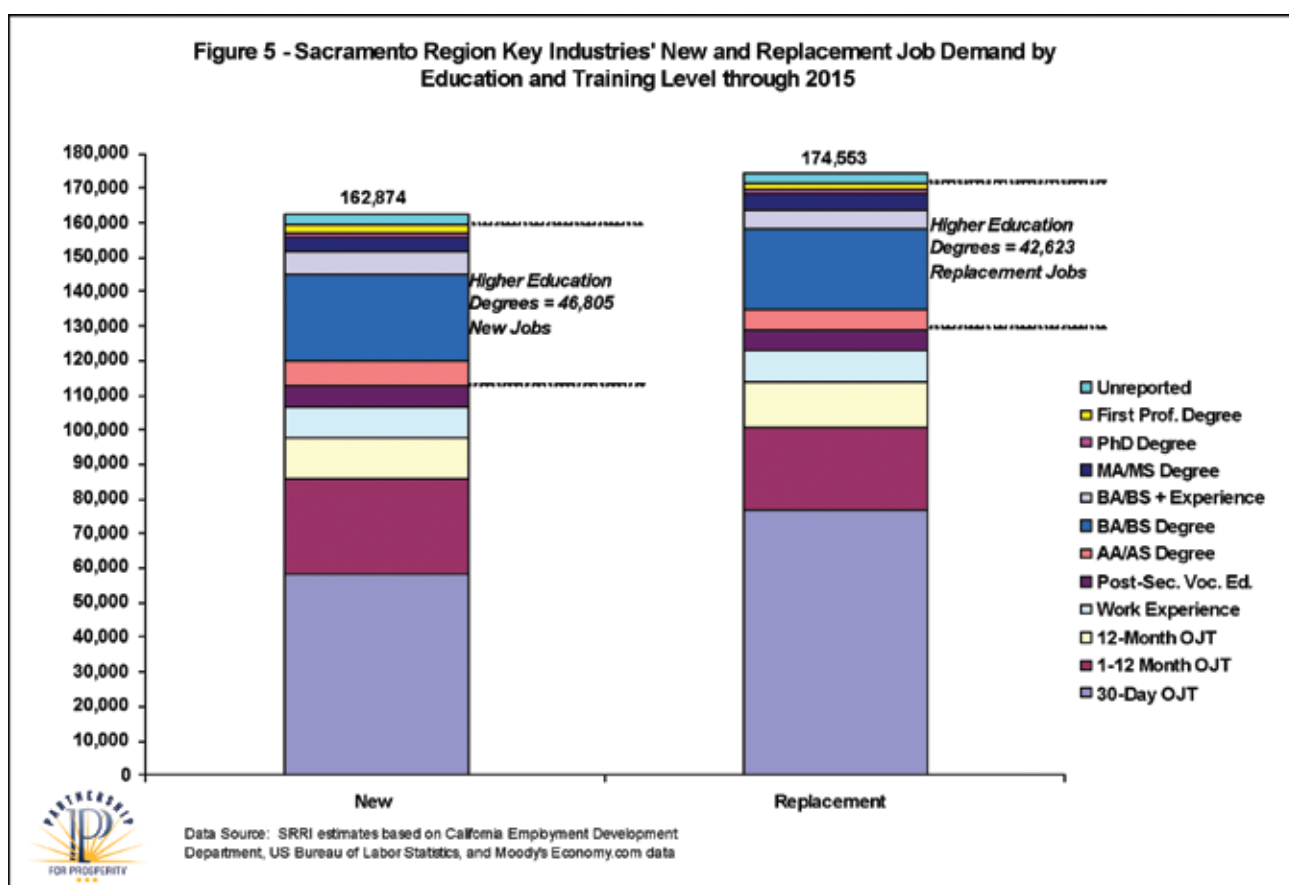
this demand expands the responsibility to public community colleges and the wider continuing education and extension programs that are part of the public higher education institutions. It is important for workforce development efforts not to lose sight of the fact that even education and training levels with lower total demand relate to a notable number of openings with the smallest containing nearly 3,000 projected openings in the next 10 years. In order to allow for a broader understanding of demand, the Action Team will be making the full set of occupation, education and training level, and provider data accessible through an interactive web site.



EDUCATION AND TRAINING LEVELS

Figure 5 displays the level of new and replacement openings for all the education and training levels through 2015. Most of the training levels at the lower end of the spectrum reflect the overall pattern of a larger amount of replacement openings than new jobs. For the largest demand category, short-term on-the-job training, this is heavily influenced by the temporary, non-career nature of many of the related jobs. At the higher end of the education and training level range, most categories (including the combination of levels requiring a higher education degree) are projected to see the majority of openings from new jobs. Even with a lesser amount of separations expected, jobs in the higher

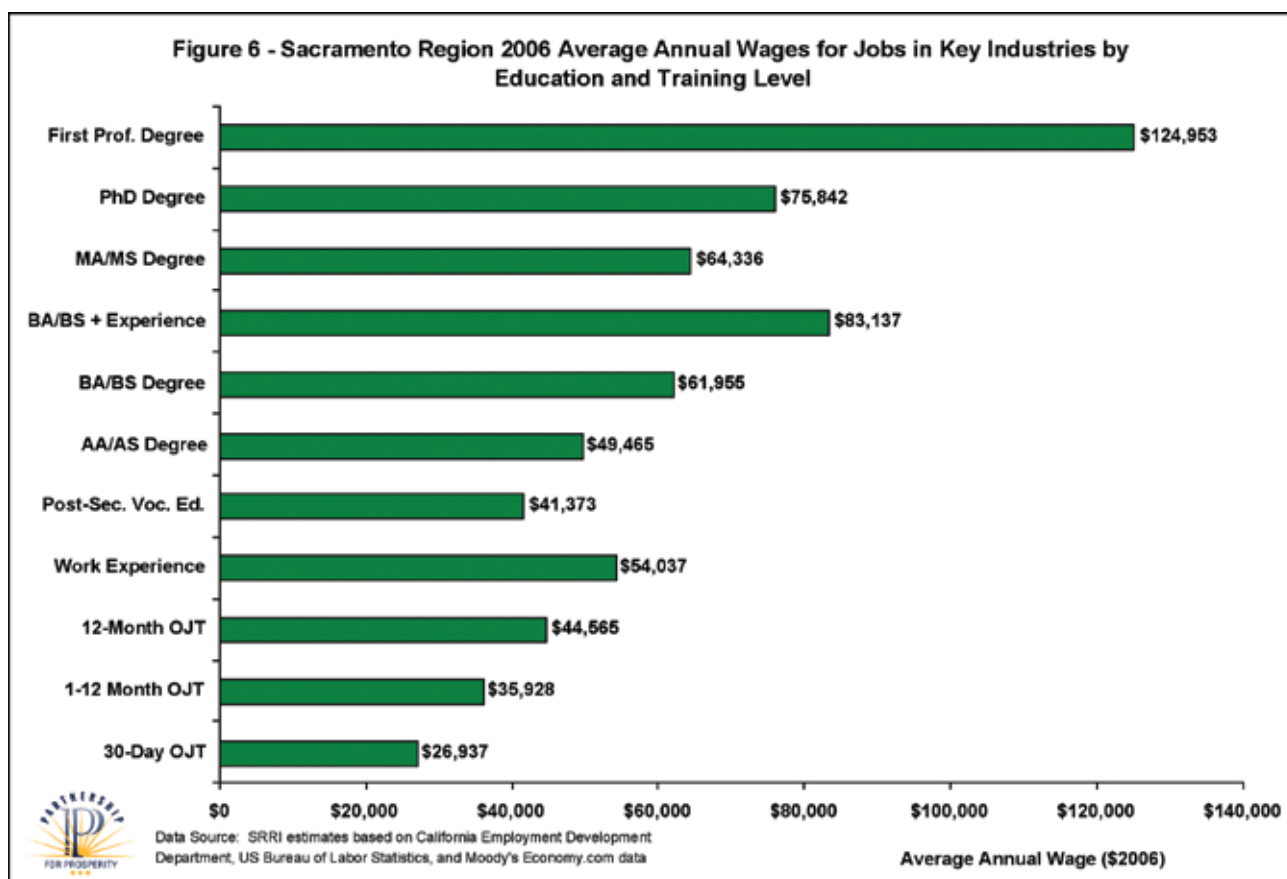
categories still present considerable opportunities and occupational demand from the key industries due to economic growth. There are two exceptions to these general observations—the majority of the projected 10-year openings for moderate-term on-the-job training are due to new jobs while most of the demand for master's degrees is forecasted in replacement needs. Overall, workforce development efforts should recognize that the dynamic nature of jobs in the lower training levels produces a greater level of replacement needs than new jobs in higher education and training levels that growth over time in the key industries could create.



EDUCATION AND TRAINING LEVELS

Many studies have shown that education and training creates added benefits in earning potential. Figure 6 displays the average annual wages (in 2006 dollars) for occupations supported by the key industries that fall into each education and training level category. With the exception of a few bumps, the concept that education pays in higher earnings holds true for the Sacramento Region. The most notable variations are reflected in the work experience and bachelor's degree plus experience levels primarily due to the fact that occupations falling within these categories are generally supervisory or managerial level positions where experience allows a worker to acquire a higher level

position. Moreover, research also demonstrates that as one moves up the training level spectrum, unemployment prospects typically become significantly lower. It is important to note that there are a number of specific occupations that do not conform to this pattern—opportunities exist for higher paying jobs in low training levels and some occupations in the higher training levels garner lower wages. In general, there are clear benefits to the economy and individual workers by ensuring that workforce needs are addressed at all levels of the training spectrum, even where projected openings seem relatively small.



EDUCATION AND TRAINING LEVELS

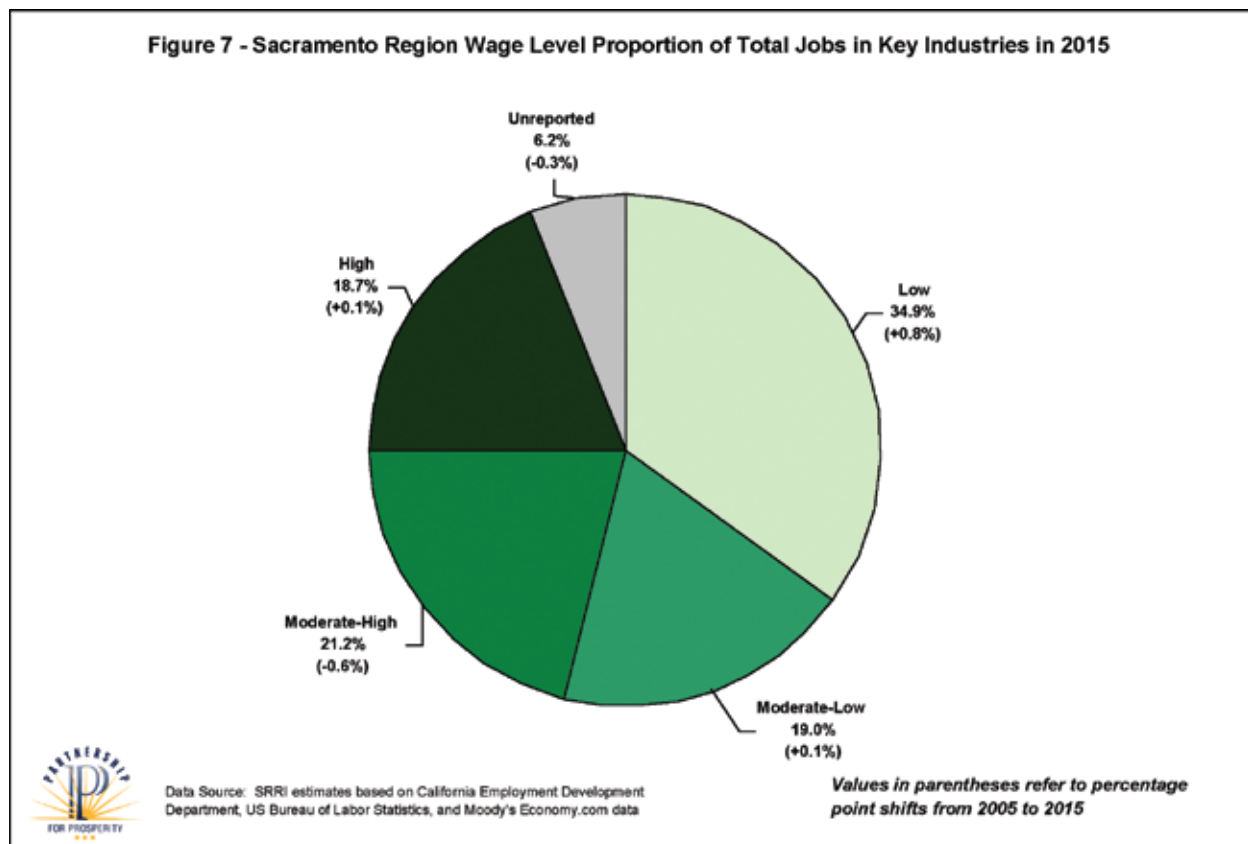
Employers in the Sacramento Region's key industries generally feel that the Region's education and training programs are doing an adequate job preparing workers and addressing workforce needs with a few exceptions noted in other sections of this report. Meeting the workforce needs of the key industries over the next decade will require continued provider effectiveness and the ability to internalize and adapt to the projected demands at all levels of the education and training spectrum. Moreover, employers feel that the availability and scope of many of the Region's education and training programs will need to be expanded in the future. While dealing with the significant demand across the board will not be an easy task, addressing the needs at the lower and middle portions of the training level range could become more difficult in the coming years. Employers and educational leaders have begun to recognize a stigma associated with these types of jobs (based on a perception that there are limited good or respectable jobs at this end of the spectrum), which is making them increasingly unattractive to the pipeline of future workers. As such, there is lack of knowledge that many good occupational choices are available that do not require higher education. For instance, sales representatives; operating engineers & other construction equipment operators; police & sheriff patrol officers; claims adjustors and many construction trades are projected to have relatively healthy levels of demand in the key industries, require only moderate- or long-term on-the-job training and earn wages in the moderate-high quartile. Special attention must be given to this issue in order to allow the economy to meet its full potential, considering the varying job opportunities and the high level of demand for lower-skilled core jobs supporting the key industries.



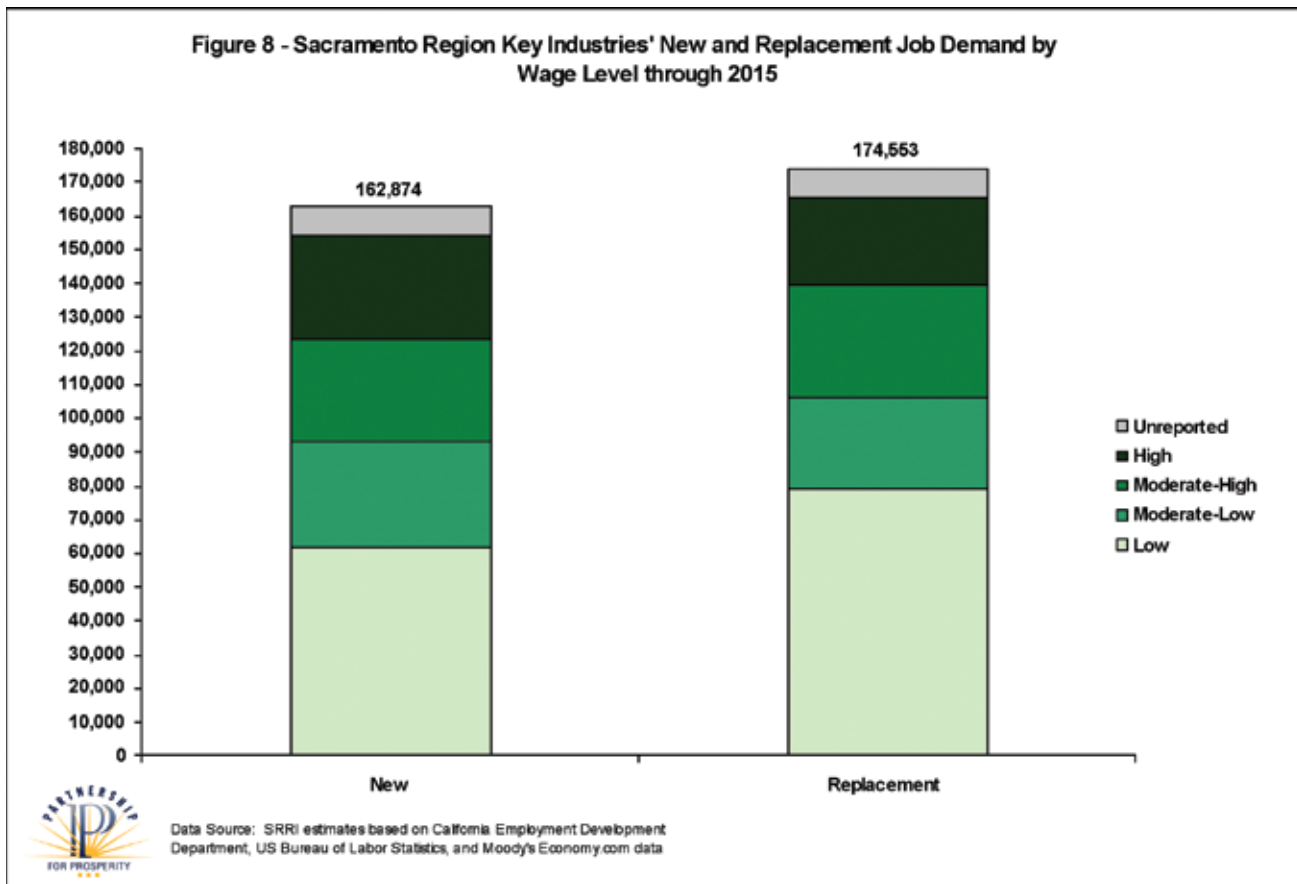
WAGE LEVELS

Over one-third of the total jobs supported by the Sacramento Region's key industries are low-paid and this proportion will likely grow slightly over the next 10 years as a result of occupational demand, as shown in Figure 7. This trend reflects the high level of new and replacement openings in lower-skilled jobs among the key industries, which, as discussed in the previous section, generally garner lower pay. By 2015, around 21 percent of jobs in the key industries could fall within the moderate-high wage level, a somewhat lower proportion than current conditions support. Both the high and moderate-low wage levels are projected to encompass about 19 percent of the 897,000 total jobs, each with a small increase in the share of jobs over the 10-year period. Shifts over time in the latter three wage levels are primarily driven by dynamic demand among a large number of specific occupations falling across different training levels and earning unique wages. Overall, this wage profile is not unusual for an economy and is what could be expected to result if the key industries grow as projected through 2015.

Figure 8 shows that most of the new and replacement job demand produced by the key industries could be captured by low-wage jobs, which is in line with the occupational and training level demand expectations. This category accounts for approximately 42 percent of the 337,000 total openings over the next 10 years (almost 142,000 openings) with the majority of openings resulting from replacement needs. The second-highest projected demand is in the moderate-high wage level with nearly 19 percent of the total projected openings (close to 63,000), also expected to see the most openings from replacements. Forecasts of 10-year demand for jobs in the moderate-low and high wage levels show each accounting for about 17 percent of the total (around 59,000 and 57,000 openings, respectively). Unlike the other two wage levels, new jobs due to industry growth make up the majority of the anticipated openings. Substantial employment opportunities could be available at all wage levels through 2015—each demanded occupation supports its own unique wage level and growth prospects.



WAGE LEVELS



Focusing mainly on current conditions, many employers in the Region's key industries believe that recruitment and retention have become more difficult due to the relatively low wages offered in the Region compared to proximate and other prospective employment regions. As a result, these regions are able to pull high-quality workers out of the Sacramento Region. This issue is coupled with employers' concerns that wage growth is not keeping pace with increases in the cost of living, exacerbating the wage differential problem. While the Region has enjoyed advantage in the cost of living and doing business in recent years, these distinctions have diminished, but have not completely disappeared. These wage issues definitely indirectly affect the ability of education and training providers to meet the key industries' occupational demands, but more directly impact employers and could require a labor cost adjustment to fully address the problem.



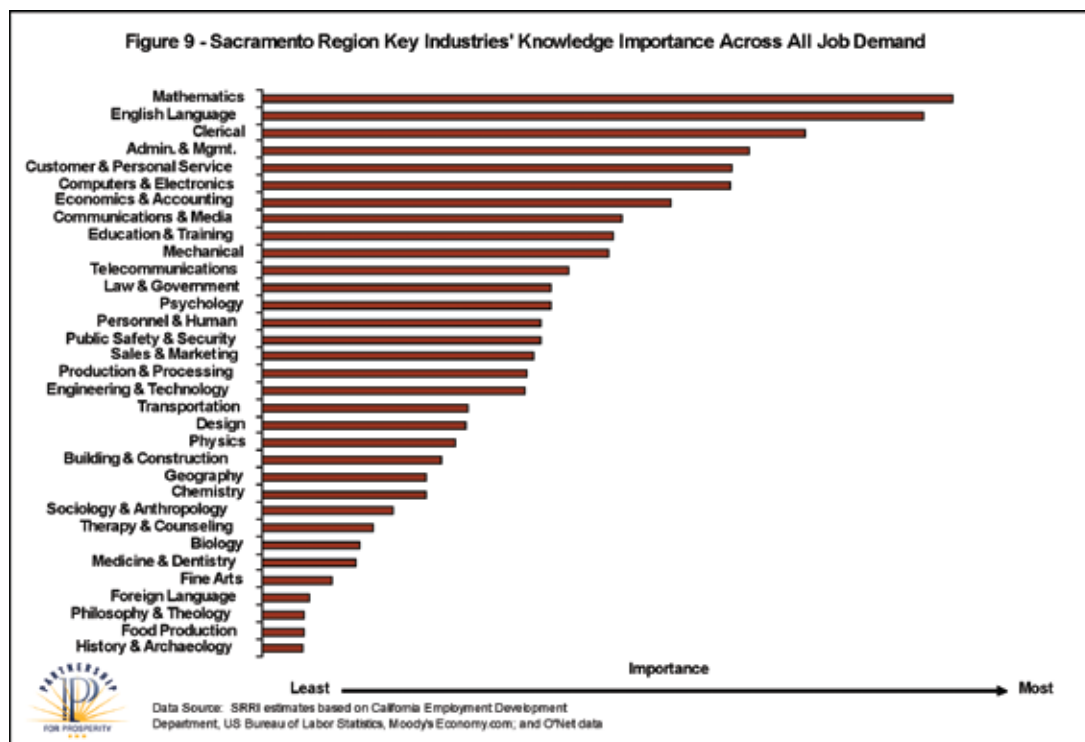
COMPETENCIES

Every occupation supported by the key industries has a unique set of competencies that are critical for job success. In addition, each of the key industries supports a unique set of skills that are critical for effective worker performance within the industry. These two groupings are known as job- and industry-specific skills and it is the intention of the Action Team to include additional information on these topics in the interactive web site accompanying this report. There is a broader group of competencies that are transferable across all jobs and are important to build into the foundational toolkit of all workers in the Sacramento Region. Figure 9 displays the importance ranking of specific knowledge sets across all jobs in the key industries. The top tier includes knowledge of mathematics; English language; clerical; administration & management; customer & personal service; and computers & electronics. The Region's education and training programs should make an effort to incorporate these aspects as part of a critical, transferable set of competencies.

In addition to the knowledge sets, it is also important to include skills as part of the transferable

competencies. Figure 10 shows the ranking of importance for skill sets among all jobs supported by the key industries. The most important skills include reading comprehension; speaking; active listening; writing; mathematics; and judgment & decision making. All of these skills should be a focus of foundational educational and training programs for all potential workers since they are important for basic job success in the industries deemed important to the Region's economy over the next 10 years.

While many of the knowledge and skill sets that are part of the transferable competencies may seem straightforward and obvious, employers within the key industries cite a lack of basic skills and highlight nearly all of these aspects. Most frequently, employers mention the need for fundamental mathematics, English, and computer/technology skills (all of which show up in the transferable competencies), but also often cite the need for basic science skills. The lack of basic skills is not only a quality issue for employers, but the lack of preparation requires employers to work on (and often pay for) remedial



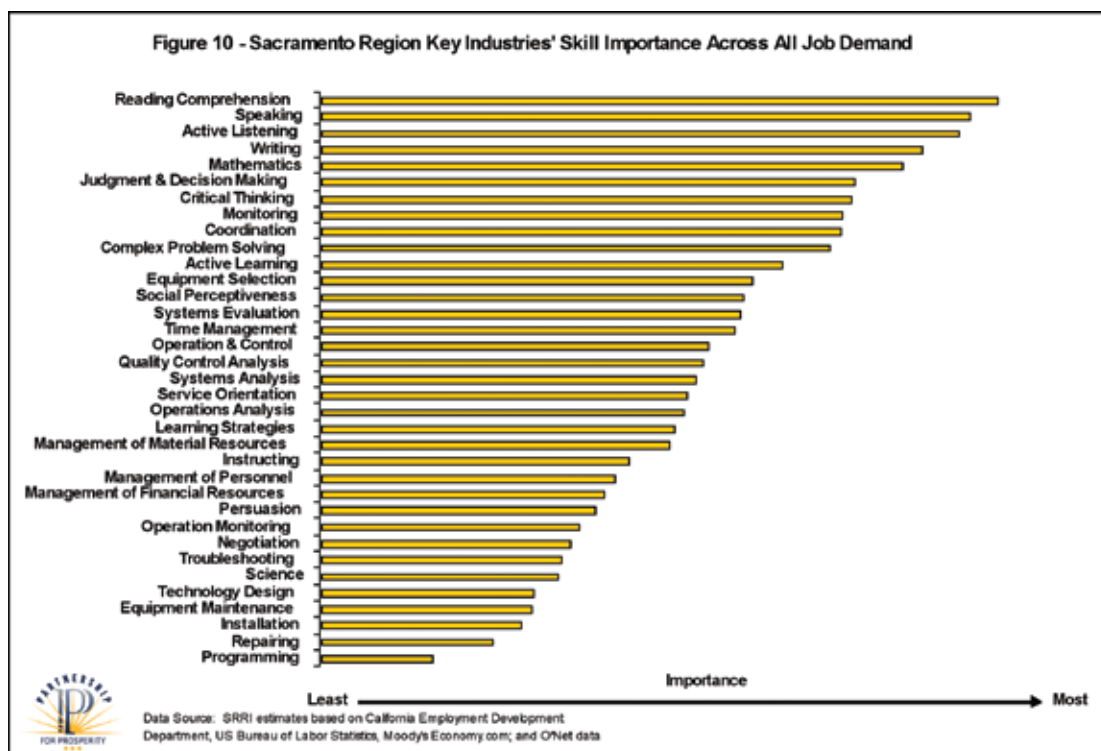
COMPETENCIES

training in addition to the standard job-related training. Moreover, employers universally stress the importance and critical need for soft skills to complement transferable competencies. The concept of soft skills refers to a traditional group of personal qualities that make someone a good employee including aspects such as strong work ethic; positive attitude; time management and organization; adaptability and flexibility; personal accountability and responsibility; attention to detail; and capacity to accept and learn from work-related criticism. Since employers cannot teach soft skills and have increasingly noted a lack of these aspects in job applicants, in many cases, they have begun to consider soft skills more important than educational and professional credentials. Some employers partially attribute the lack of soft skills to generational issues where the younger workforce and future pipeline have fundamentally different attitudes toward work than previous generations. Although it may not be possible to completely adjust the generational differences, developing soft skills would be a valuable component of education and training programs in the Region. The lack of basic

and soft skills is becoming a critical concern to employers, and if they are not effectively addressed, the key industries could struggle with workforce issues in the future, which could affect their overall performance.

“Achieving economic prosperity requires that we empower our region’s workforce to make strategic, informed career decisions. This, in turn, requires streamlined access to real-time information concerning the high-demand occupations and how to obtain the skills necessary to successfully compete for those jobs. The regional workforce forecast and CareerGPS.com will propel us in the right direction.”

Matt Yancey
Economic Development Director
Sacramento Metro Chamber



CONCLUDING REMARKS

If the 75 key industries do in fact drive the Sacramento Region's economy over the next decade and experience growth close to what the forecasts show, then demand will exist for new and replacement workers at levels and with characteristics similar to those captured in the Regional Workforce Forecast. Growth in the key industries during the next 10 years could create nearly 163,000 new jobs while demographic shifts and workforce churning could generate a need for close to 175,000 replacement jobs. In total, the key industries' workforce demand is considerable with over 337,000 openings through 2015 related to more than 750 distinct occupations, each with unique education and training requirements, critical competencies, and compensation levels. While economic development efforts will need to foster growth in the key industries, workforce development programs and education and training providers will need to address the tremendous workforce needs among the key industries in order to allow them to reach their full potential.

Developing the requisite workforce falls on a variety of education and training providers. A bulk of the 10-year demand will be for jobs requiring short- and moderate-term on-the-job training (almost 188,000 of the total 337,000 forecasted openings), placing the onus on employers, the primary and secondary education community, adult education providers, and regional occupation centers and programs. Another large segment of the openings (over 89,000 new and replacement jobs) will require some higher education degree from the associate level all the way through professional degrees where public and private higher education institutions (and their associated extension and continuing education programs) are primarily responsible for developing these types of workers. While these groups of providers relate to the areas with the greatest employment levels, a wide range of other

types of jobs will be demanded and a host of other providers will be needed to address these demands such as private vocational schools and colleges, industry associations, and jointly-sponsored labor/management associations. Regardless of education and training levels, providers must ensure that critical competencies and soft skills are being developed to ensure job success across all key industries. Overall, in order to align programs with the Region's most pronounced workforce needs, all education and training providers and the broader workforce development community will need to understand the demands generated within the key industries as they relate to their respective scopes of work.

It is important to note that the Regional Workforce Forecast provides information that informs only one half of the workforce development picture, the demand side. To facilitate more fully-informed workforce development and training and education program decisions, the supply side must also be explored. Some areas of interest could include analyses of the available education and training programs; pipeline of program completers and degrees granted; program content and objectives; levels and causes of worker out-migration; graduate and completer movement; and ability and desire to import workers. This supply information could then be compared to expected demand from the



key industries to identify aspects requiring attention such as critical gaps, misaligned programs, and possible

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oversupply. In addition to the supply-demand evaluation, regional leaders could set priorities to help focus what is likely to be a fairly complex process. If the full workforce development picture is considered (the marriage of the supply and demand sides) and the Region takes action in appropriate areas, then it can expect to support a high-quality and capable workforce that meets the needs of the industries deemed most important to the Region's economy both currently and into the future. This could ultimately give the Region a distinct competitive advantage and demonstrate tremendous progress toward one of the most important regional economic development priorities identified in the Partnership for Prosperity effort.

lower-skilled jobs by more fully informing students about job functions and opportunities. Doing so could require more robust vocational programs and career education as well as enhanced mathematics and science at the primary and secondary school levels. Finally, in order to help mitigate the loss of institutional knowledge with retirement, employers stated that businesses need to figure out ways to keep retirees plugged in so they can continue to contribute to the development of the pipeline of future leaders and the Region's economy. The Partnership for Prosperity Education/Workforce Action Team and employers in the Region's key industries universally feel that a well-developed, interactive web site that combines the workforce demand data from the Regional Workforce



Regional leaders will need to create constructive strategies to help align the workforce with the local economy. Throughout the study, employers in the key industries identified some strategies that should be considered when the time is right. To allow providers to stay in touch with industry needs, employers suggested enhancing industry advisory groups and formal meetings with employers as well as increasing efforts to link businesses with schools in a relevant way. Employers also brought up the idea of providing incentives to drive people into the programs or fields that relate to the most demanded aspects of the workforce. This idea primarily focused on higher education, but could be relevant at other education and training levels. Additionally, employers in the key industries felt that there is a need to encourage students to become interested early on in occupations that are most in demand. Further, they suggested developing models showing how mathematics and science link to career pathways and removing the stigma of

Forecast and the occupation- and provider-specific information gathered in the clearinghouse effort would be extremely beneficial. Regional leaders were particularly drawn to the ability of such a site to act as a tool for job seekers, parents, students; employers, education and training providers, economic developers, and the workforce development community. They stressed, however, that the ultimate utility will come from the site's ability to remain user-friendly and up-to-date. The latter will require not only that the clearinghouse information be revised as programs change, but also that the job demand forecasts be updated. Considering that the forecasts are likely to be affected by shifts in occupational structure, major regional developments, economic restructuring, and changes in the local business climate, it would be appropriate to revisit the forecast every two to three years.

Research Methodology

The research methodology SRRI employed for each of the study's four foundational principles is described in this appendix. This methodology guided the analysis from industry sectors, to occupations, to training levels, and finally to knowledge and skills. In addition, the methodology used for the supplemental wage and training provider analysis is also discussed in this appendix.

Principle 1. Industry sectors and the businesses within them are the primary drivers of occupational demand.

To address the first principle, SRRI aimed at identifying key industries that will be important to the Sacramento Region's economy in the future. Work on this objective was divided into two main tasks. The first task focused on analyzing primary and secondary data to select key industries. SRRI collected historical private sector industry employment data for the Sacramento Region and California from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages. Data were gathered at the four-digit industry sector level, which offers a reasonable balance between detail and availability.¹ Public sector data were collected from the Employment Development Department's Current Employment Statistics due to the more appropriate accounting of specific government activities.² SRRI analyzed data from 1995 to 2005 (the latest available year at the commencement of the study) for more than 300 sectors to develop a basis for selecting key industries.

The selection of key industries was based on a four-step process. In the first step, SRRI created an indexing methodology that scored each sector relative to the others on a zero to 100 scale using the following indicators:

- Composition—proportion of total number of employees in all industries
- Absolute Growth—change in the number of employees over time
- Percent Growth—rate of change in the number of employees over time
- Shift in Composition—percentage point change in composition over time
- Specialization (also referred to as location quotient)—ratio of regional composition to statewide composition
- Change in Specialization—rate of change in specialization over time

All indicator scores were averaged to create an overall score with the first two weighted more heavily than the others since they relate specifically to number of jobs, which is ultimately the focus of the project. The final scores were ranked, and relatively poor-performing industries were identified. This analysis was based on the assumption that historical performance dictates, to some extent, future importance in the Region's economy.

The second step added two more indicators—regional employment multipliers (from IMPLAN input-output model, 2004 Coefficients) and base versus local-serving activities.³ Those industries that were above the median employment multiplier were identified and the mix of base and local-serving industries was tested for industries showing strong performance.

¹ Industry data based on the North American Industrial Classification System (NAICS) are presented at different levels of detail based on a hierarchy according to the number of digits, ranging from two-digit (major sectors—for instance, 23 Construction) to six-digit (specific activities—for example, 236115 New Single-Family Housing Construction). Due to non-disclosure rules, data at the most detailed levels (four-digits or more) are frequently not available for local areas (like Sacramento County). The NAICS system groups business establishments together based on similarity in business processes used to produce goods or services. More information on NAICS is available at www.census.gov/epcd/naics02/.

² The Quarterly Census of Employment and Wages allocates public sector activities among standard sectors and public administration while the Current Employment Statistics separates out government into federal, state, and local components. These two data series are not directly comparable, but the separation in this analysis allows for reasonable estimates.

³ Employment multipliers estimate how many more jobs are generated from each job in a particular industry in other sectors which supply goods and services (indirect impact) and consumer services to employees. Specific industry sectors usually take on one of two primary roles based on whether their growth causes changes in a region's economic structure and drives development or if their activities are generally a consequence of regional development. The first role describes what is known as a base industry sector while the latter is essentially a local-serving sector.

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SRRI worked with Valley Vision in the third and fourth steps to obtain input from the Education Action Team and the Region's economic development community.⁴ The third step looked to the Education/Workforce Action Team to provide general input on what types of economic

activities they felt would be important to the Region's economy going forward as well as valuable activities that are currently emerging. SRRI took this input and balanced it with industry analysis to select a preliminary list of key industries. In the fourth step, this list was tested in a focus group of economic development professionals who were asked to offer feedback on the list and identify emerging and targeted industries. An e-mail based survey was also made available to those economic development professionals who were not directly involved in the focus group. The preliminary list was adjusted based on the feedback from the economic development community and was then taken back to the Action Team for final validation and approval.

Ultimately, 75 industries were selected as key industries (four-digit industry sector level) for the Regional Workforce Forecast, reflecting a balance of objective industry analysis and informed feedback from economic development professionals and the Action Team. These industries account for 82 percent of the analyzed regional employment in 2005, show a reasonable mix of base and local-serving sectors, and relate to both established and emerging activities.

After selecting the key industries, the second main task involved developing projections of employment for all 75 industries annually out ten years. Originally, this project was designed to make use of publicly-available industry employment projections, especially those from the Employment Development Department. However, at the time of analysis, projections for a critical component of the Region's economy (Yuba and Sutter Counties) were not available and other projections offered incomplete or limited industry detail. Therefore, this task utilized a hybrid projection approach that does not develop economic forecasts for all 75 industries from scratch, but creates estimates from a mix of historical patterns, statewide expectations, and regional major sector forecasts. The hybrid approach was completed in two steps.

Step one involved examining the major to sub-sector relationship for each of the key industries. Specifically, SRRI analyzed the proportion of the applicable major sector employment that was encompassed in each of the key industries. This proportion was adjusted over time according to the Employment Development Department's projections of California industry employment (2004-2014 series). This was based on the assumption that, over time, shifts in the Sacramento Region's major sector structure will follow a similar pattern as the state overall. The California ten-year change was annualized, and the percentage point difference was applied to the Sacramento Region data starting in 2005 (the 2014 proportion was held constant for 2015).⁵ All in all, this step provided an estimate of how the relationship between the key industries and their applicable major sectors might change over the next ten years.

⁴ Members of the economic development community include city and county economic development departments, utility economic development representatives, and economic development corporations.

⁵ This analysis was done at the four-digit to two-digit industry level (for instance, if 2361 Residential Building Construction were expected to make up a smaller proportion of 23 Construction in California over the next ten years, this same general pattern would be reflected in the Sacramento Region, but calibrated to local base conditions).

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The second step was informed by annual major sector employment forecasts from the Moody's Economy.com County Forecast Database (sub-sector detail is not available at the local level). These forecasts were used as beacons, guiding potential major sector performance in the Sacramento Region over the next ten years. To create the detail necessary for the key industries, SRRI applied the proportions developed in the first step to total major sector employment forecasts for the Region. Due to lack of detail in the California projections for Educational Support Services; Traveler Accommodations; and Remediation & Other Waste Management Services, the 2005 proportion was held constant through 2015 and applied to major sector forecasts. Similarly, due to the unique structure of the Government sector in the Sacramento Region, the associated 2005 proportions were also held steady for key public sector industries throughout the 10-year period. Ultimately, this approach yielded annual estimates of employment for the key industry sectors through 2015.⁶



Principle 2. Occupational demands within industry sectors are based on staffing patterns and consist of new and replacement jobs.

For the second principle, SRRI's objective was to identify predominant occupations employed within the 75 key industry sectors. SRRI utilized a three-task approach to analyze the occupations. The first task involved gathering and analyzing staffing patterns based on the National Industry-Specific Occupational Employment and Wage Estimates (2006 series).⁷ Staffing patterns identify specific occupations typically employed within industry sectors at the four-digit level along with the proportion of workers in the occupations to total employment in the industry sector. While California and some regional staffing patterns exist, they are not publicly-available at the detailed industry sector level and SRRI analysis shows that they display a similar pattern as the national average for many of the major sectors that are available. There is one general exception to this conclusion—the public sector is unique at the statewide level and requires special analysis based on establishment ownership. To address this issue, SRRI made a special request to the Employment Development Department for staffing patterns at the statewide level for public sector ownership (2006 series). These staffing patterns helped define the public administration occupations in the Federal, State, and Local Government sectors as well as significant government activities in other sectors, such as Educational Services and Health Care & Social Assistance where jobs should be allocated to the government sectors based on ownership. It is important to note that the level of precision in these data led to a loss of sub-sector detail for the Federal, State, and Local Government sectors. After appropriately allocating government occupations using the special staffing patterns, SRRI merged

⁶ Agriculture projections were not available; therefore, Fruit & Nut Tree Farming forecasts were produced using a simple linear trend of employment.

⁷ Business establishments in all industry sectors can either be owned by private or public sector entities. All the statistics related to those establishments, such as employment and wages, are allocated to one of the two ownership categories.

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the primary staffing patterns to create industry-occupation matrices for the 75 key industry sectors. The matrices for most of the key industries included 100 or more occupations. Necessarily, many occupations are part of the staffing patterns for multiple industry sectors—when aggregated at the occupation level, 754 unique occupations are supported by the 75 key industry sectors.⁸

For the second task, SRRI applied the occupation proportions from the industry-occupation matrices to the projected industry employment for the key industry sectors. This resulted in a listing of the specific occupations supported by each of the key industries and the total number of jobs in each occupation by year from 2005 to 2015. Occupations where calculations showed less than one-half position in the base year in a specific industry were eliminated from the data set. Since the staffing patterns do not have full coverage of total employment in the industry sector, a residual or unreported number of jobs were also included in the occupational projections.⁹ The annual employment projections allowed SRRI to calculate one of the two pieces of total occupational demand, new jobs, in the two-, five-, and ten-year increments that the Education/Workforce Action Team determined would be most useful for workforce development planning at various levels.



The other piece of total occupational demand, replacement jobs, was the focus of the third task. In this task, SRRI collected replacement rates from the Employment Development Department's occupational projections for the Sacramento Region and California and the Bureau of Labor Statistics' projections for the United States (2002-2012 series for Yuba and Sutter Counties and 2004-2014 series for the other geographies). Replacement rates measure the need for jobs in a specific occupation due to worker separations (e.g. promotions, career changes, and retirement) in a specific time period. SRRI generated annual replacement rate assumptions for the aggregated Sacramento Region using the projection data sets and applied the rates to the occupational employment data. For those occupations where regional replacement rates were not available, California annual rates were used, and for those where state rates were not reported, national rates were utilized.¹⁰ These calculations resulted in estimates of replacement needs on an annual basis through 2015 and over the focus two-, five-, and ten-year periods. Finally, SRRI combined the new and replacement jobs to generate estimates of total occupational demand annually over the next ten years as well as the desired time periods.

⁸ The specific occupations are based on the Standard Occupational Classification (SOC) System, which classifies workers into occupational categories based on similarity of required education, duties, skills, or experience. More information on SOC is available at www.bls.gov/soc/.

⁹ The majority of the applicable major sectors at the national level have staffing patterns coverage of 90 percent or greater. The exceptions with less than 90 percent coverage include Agriculture, Forestry, Fishing, & Hunting; Utilities; Arts, Entertainment, & Recreation; and Other Services, all of which are less than 3 percent of the analyzed regional employment in 2005.

¹⁰ For occupations reported across the Sacramento Region, California, and United States projection data sets, replacement rates vary minimally.

Principle 3. There are typical education and training requirements for occupations that allow for employee proficiency and reflect the preferences of employers.

In order to bring the training levels that are the core of Principle 3 into the analysis, SRRI relied on the Bureau of Labor Statistics' Occupational Training and Education Classifications. This classification assigns one of 11 required training levels to each occupation. While there are many ways to enter an occupation, this system reflects the manner in which most workers become fully qualified or proficient in that occupation and the preferences of most employers. SRRI utilized the training levels associated with the Employment Development Department's occupational projections for California and looked to the Bureau of Labor Statistics' national projections for occupations that were unclassified at the state level (2004-2014 series).¹¹ This analysis assumes that occupations in the Sacramento Region maintain the same typically-required training levels as the statewide average (and the nation in a few cases). By merging the 754 occupations with the training information, SRRI was able to calculate employment and occupational demand (new and replacement jobs) for each of the education and training levels. Due to the fact that training levels for some occupations were not available, SRRI created a residual or unreported training level. The Bureau of Labor Statistics' definitions for each of the 11 training levels are presented below:

1. **First Professional Degree**—occupations that require at least two years of full-time academic study beyond a bachelor's degree (for example, law, medicine, dentistry, and clergy).
2. **Doctoral Degree (PhD)**—occupations that require at least three years of full-time academic study beyond a bachelor's degree culminating in a doctoral degree.
3. **Master's Degree (MA/MS)**—occupations that require the completion of a master's degree program which is usually one to two years beyond a bachelor's degree.
4. **Bachelor's Degree (BA/BS) or Higher and Some Work Experience**—occupations that generally require work experience in an occupation requiring a bachelor's or higher degree. Most occupations in this category are managerial occupations that require work experience in a related non-managerial occupation.
5. **Bachelor's Degree (BA/BS)**—occupations that require the completion of at least four but not more than five years of full-time academic study beyond high school resulting in a bachelor's degree.
6. **Associate Degree (AA/AS)**—occupations that require the completion of at least two years of full-time academic study beyond high school.
7. **Post-Secondary Vocational Education**—occupations that require completion of vocational school training.
8. **Work Experience**—occupations that require skills obtained through work experience in a related occupation.
9. **Long-Term On-the-Job-Training**—occupations that require more than 12 months of on-the-job training or combined work experience and formal classroom instruction for workers to develop the skills needed for average job performance.
10. **Moderate-Term On-the-Job-Training**—occupations in which workers can develop average job performance after 1 to 12 months of combined on-the-job experience and informal training.
11. **Short-Term On-the-Job-Training**—occupations in which workers can develop skills needed after a short demonstration or up to one month of on-the-job experience and instruction.

¹¹ For occupations reported in both the California and United States projection series, training levels are alike.

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“ We’re excited about the possibilities of the Sacramento Area Regional Occupational Outlook and Training Resource website. The website is the first of it’s kind and provides a wealth of descriptive and statistical information, including occupational and industry forecast data, as well as a comprehensive listing of the public and private sector education and training providers and programs for the Sacramento region. ”

Mark Ingram
Chair
Sacramento Works, Inc.

The Education/Workforce Action Team also requested that the likely workforce training provider be captured in this analysis. To meet this request, SRRI studied degree, career technical education, and workforce development-related information for the state’s higher education and K-12 systems and reviewed literature addressing other education and training providers and programs. By incorporating this information, the study allows for an understanding of which types of providers would be most demanded or affected by the projected occupational demand. Ultimately, SRRI identified 13 general types of providers that are active in the Sacramento Region and relied on research and input from the Action Team to link each of the providers with the 11 Bureau of Labor Statistics training levels. The providers and affiliated training levels are listed below:

1. **University of California**—First Professional Degree; Doctoral Degree; Master’s Degree; Bachelor’s Degree or Higher and Some Work Experience; and Bachelor’s Degree
2. **California State University**—Doctoral Degree; Master’s Degree; Bachelor’s Degree or Higher and Some Work Experience; and Bachelor’s Degree
3. **California Community Colleges**—Associate Degree; Post-Secondary Vocational Education; Work Experience; and Long-Term On-the-Job Training
4. **University of California Extension**—Master’s Degree; Post-Secondary Vocational Education; Work Experience; and Long-Term On-the-Job-Training
5. **California State University Continuing Education**—Master’s Degree; Bachelor’s Degree or Higher and Some Work Experience; Bachelor’s Degree; Post-Secondary Vocational Education; Work Experience; and Long-Term On-the-Job-Training

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6. **Private Higher Education Institutions**—First Professional Degree; Doctoral Degree; Master's Degree; Bachelor's Degree or Higher and Some Work Experience; Bachelor's Degree; Associate Degree; Post-Secondary Vocational Education; Work Experience; and Long-Term On-the-Job-Training
7. **Private Vocational Schools and Colleges**—Post-Secondary Vocational Education; Work Experience; and Long-Term On-the-Job-Training
8. **Primary and Secondary Education (K-12)**—Work Experience; Long-Term On-the-Job-Training; Moderate-Term On-the-Job-Training; and Short-Term On-the-Job-Training
9. **Adult Education**—Work Experience; Long-Term On-the-Job-Training; Moderate-Term On-the-Job-Training; and Short-Term On-the-Job-Training
10. **Regional Occupational Centers and Programs**—Work Experience; Long-Term On-the-Job-Training; and Moderate-Term On-the-Job-Training
11. **Industry Associations**—Post-Secondary Vocational Education; Work Experience; and Long-Term On-the-Job-Training
12. **Jointly-Sponsored Labor/Management Associations**—Post-Secondary Vocational Education; Work Experience; and Long-Term On-the-Job-Training
13. **Employers**—Work Experience; Long-Term On-the-Job-Training; Moderate-Term On-the-Job-Training; and Short-Term On-the-Job-Training



Principle 4. Specific sets of knowledge and skills allow workers to effectively perform their job functions and are transferable within and across industry sectors.

SRRI utilized the Occupational Information Network (commonly known as O*Net) to capture additional information on competencies necessary for successful job performance. There are two important aspects in the overall concept of job competencies—knowledge (the application of organized sets of principles and facts) and skill (developed capacities that facilitate learning or the more rapid acquisition of knowledge). The O*Net database provides importance rankings (on a zero to 100 scale) for a standard set of knowledge (33) and skills (35) categories across a number of specific occupations.¹² Rankings in the database are based on national surveys of employees in the occupations regarding competencies that allow them to be successful workers. SRRI used these data to create average measures of importance for knowledge and skill categories weighted by regional employment in occupations for each of the key industry sectors and overall 75 industries, providing indications of transferable skills.¹³

¹² Knowledge and skill are part of an occupation's work requirements—descriptors referring to work-related attributes acquired and/or developed through experience and education. More information on work requirements and the O*Net knowledge and skill categories is available at www.onetcenter.org/content.html.

¹³ In addition to importance ranking for the knowledge and skill categories, the O*Net database contains a large amount of other useful national level information on specific occupations. The database is relatable to the information produced in this study through the common SOC code or occupation title. O*Net's online database is accessible at online.onetcenter.org.

Supplemental Information

To provide additional insight into how the occupational demand relates to compensation levels, SRRI augmented the occupational analysis with average hourly and annual wage data. Using the Bureau of Labor Statistics' Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates (2006 series), SRRI calculated average Sacramento Region wages for occupations weighted by employment. These data were then aligned with the 754 occupations and quartiles were calculated to create four annual wage levels including low (up to \$30,000), moderate-low (top of low to \$43,000), moderate-high (top of moderate-low to \$60,000), and high (above top of moderate-high). Since the regional wage data were not available for all occupations, a residual or unreported category was also included in the wage levels.

Technical research and analysis based on secondary data (like that provided by the Employment Development Department, Bureau of Labor Statistics, and O*Net) allows for analysis of key information related to existing conditions, historical trends, and expected changes. This type of analysis was used to produce the bulk of the study's data including the key industry sectors, occupational demand, training level requirements, critical competencies, and wage levels. When possible, it is also important to conduct primary research, such as interviews and literature reviews, in order to validate what the secondary data are showing, capture information that the data do not, and generate greater insight into specific conditions and trends. Since there are dynamic changes in the economy that secondary data might not completely address, primary research is a particularly important litmus test for projects focusing on areas like the Sacramento Region and exploring industry growth and workforce skills.

The work with the Education/Workforce Action Team and economic development community supplied the primary research to supplement the analysis for the first foundational principle, concentrating on the key industry sectors. For the occupational portion of this study, which focused on the other three guiding principles, SRRI provided two additional areas of primary research in addition to regular feedback from the Action Team: 1) interviews with major employers within the 75 key industries as well as related industry associations, workforce training providers, and educational institutions and 2) a literature review focused on occupational demand topics within the key industry sectors. The interviews were conducted in an open-ended manner revolving around broad topics including occupational demand, occupational supply, critical competencies, and education and training programs. Over a three-month period, SRRI attempted to conduct interviews with 77 representatives and, after numerous contacts, completed a total of 13 (resulting in a reasonable 17 percent response rate), spanning many of the larger key industry sectors. The limited literature review focused primarily on academic, business, and media studies and reports exploring workforce themes for the key industries in the Sacramento



APPENDIX A

Region; however, searches were expanded to the statewide and national levels for many of the sectors. To supplement the interviews and literature review, SRRI worked with Valley Vision to conduct focus conversations with representatives from three of the largest groupings of key industry sectors—Construction; Professional, Scientific, and Technical Services; and Health Care & Social Assistance. The conversations were conducted through a combination of small focus groups and phone interviews with representatives who were selected based on their experience and expertise in the industry areas. Topics covered in the conversations were similar to those in the interviews, but were expanded to include recruitment and retention issues, industry growth, and use of training programs. All in all, this primary research was used to adjust occupational demand analyses, add data to the available set of study information, and enhance discussions of skills and education and training programs.

For this entire project, it is important to note that the industry and occupational forecasts are based on a number of economic and demographic assumptions. As such, every forecast has associated risks that arise from statistical modeling, shifts in economic and demographic trends, changes in policies and preference, and technological advances. Therefore, actual performance and trends could differ significantly from the forecasts. Throughout this project, SRRI relied on analysis from other sources (cited above), all of which incorporate their own assumptions and modeling techniques. By scrutinizing the sources, creating its own analysis, and validating technical findings, SRRI attempted to provide the best estimates of occupational demand over the next ten years.



“ This information will enable students, job seekers and counselors to help them “navigate” their career and educational pathways. ”

Dave Butler
President & CEO
LEED - Linking Education and Economic Development

Data Guide

This section describes the elements that are part of the database accompanying the report. Nearly every element in the database is searchable and sortable. The Education/Workforce Action Team will build this database into an interactive web site along with the information gathered in the clearinghouse effort to allow students, job seekers, employers, education and training providers, and others to search the data and create customized reports.

Major Sector: High-level group of economic activities. Each of the key industries falls under a major sector, which describes the broader group of activities it is associated with.

Related Cluster: Group of interrelated activities encompassing more than one industry sometimes under different major sectors. Clusters include autonomous technology, building products, clean energy technology (a specific focus of another Partnership for Prosperity strategy), finance, government, healthcare, life sciences, and tourism.

NAICS: North American Industrial Classification System code. Officially defines what activities are included in the industry. More information on NAICS is available at www.census.gov/epcd/naics02/.

Sector Name: Official title of the key industry based on its NAICS code.

SOC: Standard Occupational Classification code. Officially defines what functions are included in the occupation. More information on SOC is available at www.bls.gov/soc/.



Employment: Total number of workers employed in the occupation within the industry at the referenced point.

% Change: Percentage change in employment over the referenced time period.

New Jobs: Absolute change in employment over the referenced time period.

Replacements: Absolute number of jobs needed in the occupation within the industry to make up for worker separations over the referenced time period.

Total Job Demand: Sum of new jobs and replacements over the referenced time period.

Mean Hourly Wage: Average hourly wage for all workers employed in the occupation in 2006 dollars.

Mean Annual Wage: Average annual wage for all workers employed in the occupation in 2006 dollars.

APPENDIX B

Annual Wage Quartile: Group associated with the average annual wage for all workers employed in the occupation when the average annual wages for all occupations are divided into four equal parts. The quartiles are low (up to \$30,000), moderate-low (top of low to \$43,000), moderate-high (top of moderate-low to \$60,000), and high (above top of moderate-high).

Training Level: The typically required level of training or education for the occupation. This classification reflects the manner in which most workers become fully qualified or proficient in that occupation and the preferences of most employers. More information on the training levels is available at www.labormarketinfo.edd.ca.gov/cgi/databrowsing/?PageID=172.

Training Provider: General type of training provider able to provide or facilitate acquisition of the referenced training level.

Knowledge: Importance ranking on a zero to 100 scale for the knowledge sets (the application of organized sets of principles and facts) across all occupations in the referenced industry. More information on the knowledge categories is available at www.onetcenter.org/content.html.



Skill: Importance ranking on a zero to 100 scale for the skill sets (developed capacities that facilitate learning or the more rapid acquisition of knowledge) across all occupations in the referenced industry. More information on the skill categories is available at www.onetcenter.org/content.html.

*All data presented in the database is from SRRI estimates based on California Employment Development Department, US Bureau of Labor Statistics, Moody's Economy.com, and O*Net data.*

Below is a key to navigating the *Regional Workforce Forecast* database found at www.careergps.com.

Reference time period
e.g. 15 = the year 2015, and 10-15 = the range of years 2010 to 2015

Accountants and Auditors - 13-2011.00													
Show Forecast Key		Summary Job Forecast Data								Show All Forecast Data			
Mean Annual Wage: \$60,860		Mean Hourly Wage \$29		Training Level: Bachelor's Degree									
Employment		% Change Over Time				Job Demand				New Jobs		Replacements	
10	15	05-10	05-15	07-10	10-15	05-10	05-15	07-10	10-15	05-10	05-15	05-10	05-15
6929	7789	0.13%	0.25%	0.08%	0.10%	1388	2828	845	1440	807	1666	581	1162
{Percentage numbers}		{Actual job numbers}											
Total number of workers employed in the occupation within the industry		Percentage change in employment over the referenced time period				Sum of new jobs and replacement jobs		Absolute change in employment		Absolute number of jobs needed in the occupation within the industry to make up for worker separations			

The 2008 Regional Workforce Forecast is broadly supported by employers, educators and economic developers (list below)

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The PFP Education Action Team would like to specially thank Teichert for providing access to proprietary economic and demographic databases to guide analysis in this study.

The PFP Education Action Team saw the need to create several new tools to help us all assess and plan for our workforce needs now and in the years ahead. At Career GPS you have access to a powerful online database filled with information about current and future job needs, salary levels, plus easy access to education and training programs, and more. Click www.careergps.com.



Connecting Citizens, Shaping Solutions

The Sacramento Regional Research Institute (SRRI) is a joint venture of the Sacramento Area Commerce and Trade Organization (SACTO) and California State University, Sacramento (Sacramento State). SRRI provides a full range of objective economic development and demographic research services to government entities, business, educational institutions, and nonprofit organizations. Visit us online at www.srri.net. Valley Vision is a nonprofit "action tank" that brokers and supports regional initiatives. Click www.valleyvision.org to learn more.